REMARKS

Claims 6-10 and 12-25 are currently pending in the instant application.

Rejections Under 35 U.S.C. §103

Claims 6-10 and 13-14 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kanga in view of Fan and Cushner further in view of Gush, Werber, Gelbart and Ohba and further in view of Nellissen, Wier, Trump, Karol and Speicher.

The Examiner asserts that the combination of Kanga, Fan and Cushner describes all of the features of the claimed invention except for the use of collimated light for actinic radiation and wherein the light rays emanating from the source of light strike the photosensitive printing element at a substantially perpendicular angle to the arcuate surface.

The Examiner uses Gush, Werber, Gelbart, Ohba, Nellissen, Wier, Trump, Karol and Speicher to cure the deficiencies of Kanga, Fan and Cushner and asserts that the teachings of these references suggest that it would have been obvious to use collimated light as well to strike the photosensitive printing element at a substantially perpendicular angle to the arcuate surface to obtain a more perfect image.

Applicant respectfully disagrees.

Firstly, Applicant notes that Wier is not available as prior art against the present application. The present application is a continuation-in-part of prior U.S. application Serial No. 10/768,610 which was filed on January 30, 2004, which is before the earliest publication date of the Wier reference. Applicant is entitled to rely on the priority date of the earlier application because this prior application contains all of the limitations described and claimed in the present application. Because Wier issued on July 27, 2004, Wier is not a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent which is required by 35 U.S.C. §102(e), and is thus not available as prior art against the present application.

Furthermore, as discussed in Applicants' previous response, Gush, Werber, Gelbart, and Ohba do not solve any of the deficiencies of Kanga, Fan and Cushner.

Applicant's claims are directed to a method of making a hollow cylindrical printing sleeve that includes the step of

> exposing the surface of the cylindrical sleeve to at least one source of actinic radiation to polymerize the portions of the layer of photopolymerizable material revealed during selective laser removal of the masking layer; *wherein the at least one source of actinic radiation comprises one or more collimated sources of actinic radiation*;

and further recites that

> light rays emanating from the at least one source of actinic radiation *strike the photosensitive printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.*

Applicants respectfully submit that both Werber and Gush are directed to conventional platemaking processes using liquid photosensitive compositions. There is no teaching or suggestion that such liquid photosensitive compositions would be usable in making seamless printing sleeves as in the present invention. Moreover, both Werber and Gush are directed to planar printing elements and thus do not solve the problem of collimating the source of actinic radiation strikes the printing element at an angle that is substantially perpendicular to the surface so that image quality can be improved. Thus, Werber and Gush in combination with Kanga, Fan and Cushner does not describe or suggest all of the features of the claimed invention.

Gelbart also does not solve the problems of Kanga, Fan and Cushner because Gelbart also does not recognize the problem of the loss of image quality when the source of actinic radiation hits the photocurable surface at an angle instead of perpendicular to the photocurable surface when exposing a curved or arcuate printing surface to actinic radiation. Furthermore, Gelbart also does not describe or suggest a seamless printing element but rather only a planar printing element that can be wrapped around a printing cylinder in one embodiment of his invention. Thus, the printing element of Gelbart is not arcuate as in the present invention but rather is a flat printing element that is wrapped around an arcuate surface. Thus, Gelbart does not cure any of the deficiencies of Kanga, Fan, Cushner, Werber and Gush and thus also, alone or in combination, does not anticipate or render obvious the claimed invention.

Ohba also does not cure the deficiencies of Kanga, Fan and Cushner because Ohba does not describe collimating the source of actinic radiation for the same reason as in the present application. The light source in Ohba is collimated to record an image on the surface, **not** to expose the printing element to actinic radiation after the image has been created in the printing element. Thus, Ohba also does not recognize the problem of loss of image quality when the source of actinic radiation hits the printing surface at an angle as discussed above and also does not cure any of the deficiencies of Kanga, Fan, Cushner, Werber, Gush and Gelbart.

Newly cited Nellissen, Wier, Trump, Karol and Speicher also do not cure any of the deficiencies of Kanga, Fan, Cushner, Werber, Gush and Gelbart noted above and thus also do not describe or suggest all of features of the claimed invention.

Firstly, as discussed above, Wier is not available as prior art against the instant invention because Wier issued on July 27, 2004 and is thus not a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent.

Nellissen does not cure any of the deficiencies of Kanga, Fan, Cushner, Werber, Gush and Gelbart noted above. Nellissen does not in fact describe a cylindrical element but rather describes a **spherical** element (see e.g., col. 2, lines 61-63). Furthermore, as seen in Figure 2, the light is not being collimated so that it strikes the element at an angle that is substantially perpendicular to the surface of the element at the point of impact. As seen in Fig. 2, even the reflected (i.e., collimated) light is striking the element at an angle that is not perpendicular to the point of impact. Thus, Nellissen does not describe or suggest a cylindrical printing element nor that the reflected light strikes the element at an angle that is substantially perpendicular at the point of impact and thus does not cure any of the deficiencies of Kanga, Fan, Cushner, Werber, Gush or Gelbart.

Furthermore, Trump does not cure any of the deficiencies of Kanga, Fan, Cushner, Werber, Gush, Gelbart and Nellissen noted above. In particular, Trump is imaging the internal surface of a cylindrical element, not the external surface as in the present invention and thus is not combinable with Kanga, Fan, Cushner, Werber, Gush, Gelbart and Nellissen in the manner suggested by the Examiner. In addition, Trump is also not concerned with imaging a photosensitive printing element but is instead concerned with high speed high resolution equipment used in the reproduction of film strips of the type employed in aerial reconnaissance. Thus, Trump is not concerned with solving the same problems as the instant invention and thus, alone or in combination with Kanga, Fan, Cushner, Werber, Gush, Gelbart and Nellissen does not anticipate or render obvious the claimed invention.

Finally, neither Karol nor Speicher cure any of the deficiencies of the prior art noted above. In particular, Karol and Speicher provide for exposing a photoresist coated cylinder by placing the cylinder between an outer mask and an inner mask (Fig. 2) and using conical mirrors to reflect the light so that it strikes either the mask or passes through the mask to impinge on the surface of the cylinder. However, neither Karol nor Speicher describe or suggest a method that is combinable with Kanga, Fan, Cushner, Werber, Gush, Gelbart and Nellissen to achieve the claimed invention because Karol and Speicher are coating the internal surface of the cylinder and not just the outside surface. Furthermore, neither Karol nor

Speicher describe a mask that is part of the cylindrical printing element and that is created from a layer in the cylindrical printing element. Instead, Karol and Speicher describe a mask that is "loosely mounted" relative to the cylinder. Because the mask is only loosely mounted, it is not in intimate contact with the surface of the printing cylinder and it cannot be shown that resolution is improved as in the present application and the teachings of Karol and Speicher cannot be combined with Kanga, Fan, Cushner, Werber, Gush, Gelbart and/or Nellissen to anticipate or render obvious the clamed invention.

For all of these reasons, Applicant respectfully submits that claim 6 is readily distinguished from the prior art of record. In addition claims 7-10 and 13-14, which depend directly or indirectly from claim 6 are also believed to be allowable over the prior art of record and notice to that effect is earnestly solicited. Reconsideration and withdrawal of the rejection of claims 6-10 and 13-14 as being unpatentable over Kanga in view of Fan and Cushner, further in view of Gush, Werber, Gelbart and Ohba and further in view of Nellissen, Wier, Trump, Karol and Speicher is respectfully requested.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanga in view of Fan and Cushner, further in view of Gush, Werber, Gelbart, and Ohba and further in view of Nellissen, Wier, Trump, Karol and Speicher and further in view of Kitamura in view of Plambeck and Ferree.

The Examiner asserts that there is no disclosure in Kanga, Fan or Cushner to expose the entire surface of the photosensitive printing element to actinic radiation at one time but that it is known in the art as taught by Kitamura. The Examiner concludes that the use of a quick exposure instead of a scanning exposure would have been prima facie obvious to save time in imaging the surface of the cylinder for exposure in a method such as that set forth in Wier, Trump or Nellissen.

Firstly, because claims 6-10 and 13-14 are believed to be allowable over the prior art of record for the reasons provided above, claim 12 which depends from claim 6 is also believed to be allowable over the prior art of record.

Furthermore, as discussed in Applicant's previous response, Kitamura does not describe or suggest collimating the lights sources in their method of manufacturing a printing cylinder, nor would they because the process of Kitamura is very different from the present invention and very different from the prior art cited. Kitamura is directed to a process in which a liquid photosensitive resin composition is fed into a hollow cylindrical element which is spun at a high speed to deposit the resin composition on the inner surface of the hollow cylinder and cause the resin composition to cure in situ (see e.g., claim 1). Thus, Kitamura is curing the entire surface of the resin composition through the surface of the cylinder layer. Kitamura is using multiple sources of light simply to cure the liquid resin composition. Thus, there is no teaching or suggestion in Kitamura to collimate the light source to improve image quality because there is no image that has been created. Furthermore Kitamura cannot be combined with Gelbart or Ohba, which describe cylindrical elements, because Gelbart and Ohba only describe a collimated light source that is part of a scanning head (see Gelbart, Fig. 1 and Ohba Fig. 1) and there is no teach or suggestion in any of the references to collimate multiple sources of light to simultaneously expose an entire surface of a photosensitive printing element to actinic radiation with light rays that strike the printing element at an angle substantially perpendicular to the surface of the printing element at the point of impact.

In addition, Trump describes a light source that is arranged internally as to the cylinder and as such it would not be possible to modify Trump to use multiple light sources as suggested by the Examiner because the setup of Trump would not make this possible.

Finally, Nellissen is also not believed to be modifiable in the manner suggested by the Examiner because Nellissen is concerned with using a single mask instead of multiple masks to achieve the desired result. The use of multiple light sources would necessitate the need for

multiple masks and thus teaches away from the desirable result that Nellissen strives to achieve.

For all of these reasons, reconsideration and withdrawal of the rejection of claim 12 as being unpatentable over Kanga in view of Fan and Cushner, further in view of Gush, Werber, Gelbart, and Ohba and further in view of Nellissen, Wier, Trump, Karol and Speicher and further in view of Kitamura in view of Plambeck and Ferree is earnestly solicited.

Claim 13 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kanga in view of Fan and Cushner, further in view of Gush, Werber, Gelbart and Ohba, further in view of Nellissen, Wier, Trump, Karol and Speicher, and further in view of Kitamura and further in view of Plambeck and Ferree.

The Examiner asserts that the combination of Kanga, Fan and Cushner in view of Kitamura does not describe the use of collimators, wherein at least one surface substantially absorbs actinic radiation incident upon the surface and actinic radiation passes through the collimator before reaching the photopolymerizable printing plate. The Examiner uses Plambeck and Ferree for their teaching of an egg-crate baffle and concludes that it would be obvious to use a device such as an egg crate baffle to control the angle of light in imaging the cylinders of Fan and Cushner.

As described in the disclosure (see e.g., page 3), when a printing sleeve (instead of a flat printing plate) is exposed to actinic radiation, the source of actinic radiation may due to curvature of the surface, hit the photocurable surface at an angle, instead of perpendicular to the photocurable surface, resulting in loss of image quality. As discussed in the disclosure (see e.g., pp. 11-12), the inventor of the present invention has discovered that the quality of the relief image can be improved by collimating one or more sources of antic radiation. In the instant invention, this refers to the light rays striking the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact. As shown in Figs. 2 and 4, the UV lamps or other actinic radiation

source(s) can be collimated by positioning at least one collimator between each of the UV lamps and photopolymerizable printing sleeve. This feature is neither described nor suggested in any of the prior art cited by the Examiner.

The Examiner has cited Plambeck and Ferree for their teachings of egg-crate baffles, because such collimators are not described or claimed in either Fan or Cushner. However, neither of these references, alone or in combination describes the use of such collimators so that the light rays strike the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.

Plambeck describe the use of broad uniform light sources, such as a bank of fluorescent tubular lamps, wherein extremely low angle rays can come from more remote portions of the source and are thus lower in intensity and do not ordinarily effect polymerization. In this instance, Plambeck mentions that a light-controlling baffle can be used between a light source and a negative to eliminate those rays below the minimum desired angle. Thus Plambeck does not recognize the use of a collimator to collimate the light so that light rays strike an arcuate surface (i.e., the printing sleeve) at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact but rather only describe the use of a collimator so that low angle rays can be eliminated.

Ferree does not solve the deficiencies of Plambeck because Ferree also does not recognize the use of a collimator to collimate light so that the light rays strike an arcuate surface at an angle that is substantially perpendicular to the surface at a point of impact so that image quality can be improved. Ferree is only concerned with eliminating glare when light is used for local illumination. Thus, there is no teaching or suggestion in Ferree to use a collimator in the manner claimed in the present invention. Applicant respectfully submits that Plambeck's use of a light controlling baffle to eliminate rays below a minimum desired angle and Ferree's use of a baffle to eliminate glare, alone or in combination, do not describe or suggest the use of a collimator in accordance with the present invention and thus alone or in

combination with Kanga, Fan Cushner, Gush, Werber, Gelbart, and Ohba, Nellissen, Wier, Trump, Karol and Speicher do not anticipate or render obvious the claimed invention.

For all of these reasons, reconsideration and withdrawal of the rejection of claim 13 as being unpatentable over Kanga in view of Fan and Cushner, further in view of Gush, Werber, Gelbart and Ohba, further in view of Nellissen, Wier, Trump, Karol and Speicher, and further in view of Kitamura and further in view of Plambeck and Ferree is respectfully requested.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanga in view of Fan and Cushner, further in view of Gush, Werber, Gelbart and Ohba, further in view of Nellissen, Wier, Trump, Karol and Speicher and further in view of Plambeck and Ferree.

Because claims 6-10 and 13-14 are believed to be allowable over the prior art of record for the reasons provided above, claim 15 which depends from claim 14 is also believed to be allowable over the prior art of record.

Claims 16-17 and 21-25 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fan in view of Cushner and further in view of Plambeck and Ferree and further in view of Nellissen, Wier, Trump, Karol and Speicher.

The Examiner asserts that Fan and Cushner describe the use of a photosensitive printing element on a cylindrical seamless cylinder but does not describe the use of collimated light for exposing the photopolymerizable layer. The Examiner uses Plambeck and Ferree to cure the deficiencies of Fan and Cushner and asserts that Plambeck and Ferree describe the use of an egg crate baffle. The Examiner concludes that it would be obvious to one skilled in the art to use an egg crate baffle to control the angle of light in imaging the cylinders of Fan and Cushner.

Applicant respectfully disagrees.

As described in the disclosure (see e.g., page 3), when a printing sleeve (instead of a flat printing plate) is exposed to actinic radiation, the source of actinic radiation may due to curvature of the surface, hit the photocurable surface at an angle, instead of perpendicular to the photocurable surface, resulting in loss of image quality. As discussed in the disclosure (see e.g., pp. 11-12), the inventor of the present invention has discovered that the quality of the relief image can be improved by collimating one or more sources of antic radiation. In the instant invention, this refers to the light rays striking the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact. As shown in Figs. 2 and 4, the UV lamps or other actinic radiation source(s) can be collimated by positioning at least one collimator between each of the UV lamps and photopolymerizable printing sleeve. This feature is neither described nor suggested in any of the prior art cited by the Examiner.

The Examiner has cited Plambeck and Ferree for their teachings of egg-crate baffles, because such collimators are not described or claimed in either Fan or Cushner. However, neither of these references, alone or in combination describes the use of such collimators so that the light rays strike the photosensitive printing sleeve at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.

Plambeck describe the use of broad uniform light sources, such as a bank of fluorescent tubular lamps, wherein extremely low angle rays can come from more remote portions of the source and are thus lower in intensity and do not ordinarily effect polymerization. In this instance, Plambeck mentions that a light-controlling baffle can be used between a light source and a negative to eliminate those rays below the minimum desired angle. Thus Plambeck does not recognize the use of a collimator to collimate the light so that light rays strike an arcuate surface (i.e., the printing sleeve) at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact but rather only describe the use of a collimator so that low angle rays can be eliminated.

Ferree does not solve the deficiencies of Plambeck because Ferree also does not recognize the use of a collimator to collimate light so that the light rays strike an arcuate surface at an angle that is substantially perpendicular to the surface at a point of impact so that image quality can be improved. Ferree is only concerned with eliminating glare when light is used for local illumination. Thus, there is no teaching or suggestion in Ferree to use a collimator in the manner claimed in the present invention. Applicant respectfully submits that Plambeck's use of a light controlling baffle to eliminate rays below a minimum desired angle and Ferree's use of a baffle to eliminate glare, alone or in combination, do not describe or suggest the use of a collimator in accordance with the present invention.

The Examiner uses newly cited Nellissen, Wier, Trump, Karol and Speicher to cure the deficiencies of Fan, Cushner, Plambeck and Ferree. However, it is respectfully submitted that Nellissen, Wier, Trump, Karol and Speicher, alone or in combination, also do not cure any of the deficiencies of Fan, Cushner, Plambeck and Ferree noted above and thus, alone or in combination, also do not describe or suggest all of features of the claimed invention.

Firstly, as discussed above, Wier is not available as prior art against the instant invention.

Nellissen does not cure any of the deficiencies of Fan, Cushner, Plambeck and Ferree noted above. Nellissen does not in fact describe a cylindrical element but rather describes a **spherical** element (see e.g., col. 2, lines 61-63). Furthermore, as seen in Figure 2, the light is not being collimated so that it strikes the element at an angle that is substantially perpendicular to the surface of the element at the point of impact. As seen in Fig. 2, even the reflected (i.e., collimated) light is striking the element at an angle that is not perpendicular to the point of impact. Thus, Nellissen does not describe or suggest a cylindrical printing element nor that the reflected light strikes the element at an angle that is substantially perpendicular at the point of impact and thus does not cure any of the deficiencies of Fan, Cushner, Plambeck and Ferree.

Trump does not cure any of the deficiencies of Fan, Cushner, Plambeck and Ferree noted above. In particular, Trump is imaging the internal surface of a cylindrical element, not the external surface as in the present invention and thus is not combinable with Fan, Cushner, Plambeck, Ferree and Nellissen in the manner suggested by the Examiner. In addition, Trump is also not concerned with imaging a photosensitive printing element but is instead concerned with high speed high resolution equipment used in the reproduction of film strips of the type employed in aerial reconnaissance. Trump is not concerned with solving the same problems as the instant invention and thus, alone or in combination with Kanga, Fan, Cushner, Werber, Gush, Gelbart and Nellissen does not anticipate or render obvious the claimed invention.

Finally, neither Karol nor Speicher cure any of the deficiencies of the prior art noted above. In particular, Karol and Speicher provide for exposing a photoresist coated cylinder by placing the cylinder between an outer mask and an inner mask (Fig. 2) and using conical mirrors to reflect the light so that it strikes either the mask or passes through the mask to impinge on the surface of the cylinder. However, neither Karol nor Speicher describe or suggest a method that is combinable with Fan, Cushner, Plambeck, Ferree and Nellissen to achieve the claimed invention because Karol and Speicher are coating the internal surface of the cylinder and not just the outside surface. Furthermore, neither Karol nor Speicher describe a mask that is part of the cylindrical printing element and that is created from a layer in the cylindrical printing element. Instead, Karol and Speicher describe a mask that is "loosely mounted" relative to the cylinder. Because the mask is only loosely mounted, it is not in intimate contact with the surface of the printing cylinder and it cannot be shown that resolution is improved as in the present application and the teachings of Karol and Speicher cannot be combined with Fan, Cushner, Plambeck, Ferree and/or Nellissen to anticipate or render obvious the clamed invention.

For all of these reasons, reconsideration and withdrawal of the rejection of claims 16-17 and 21-25 as allegedly being unpatentable over Fan in view of Cushner, further in view of Plambeck and Ferree and further in view of Nellissen, Wier, Trump, Karol and Speicher is respectfully requested.

Claims 17-20 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Fan in view of Cushner and further in view of Plambeck and Ferree, further in view of Nellissen, Wier, Trump, Karol and Speicher and further in view of Kanga.

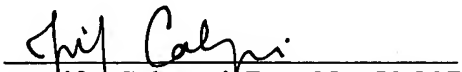
Because claim 16 is believed to be allowable over the prior art of record for the reasons provide above, claims 17-20 which depend directly or indirectly from claim 16 are also believed to be allowable over the prior art of record and notice to that effect is earnestly solicited.

CONCLUSION

Applicant believes that the foregoing is a full and complete response to the Office Action of record. Accordingly, an early and favorable reconsideration of all of the claims is requested. Applicant believes that claims 6-10 and 12-25 are now in condition for allowance and an indication of allowability and an early Notice of Allowance of all of the claims is respectfully requested.

If Examiner feels that a telephonic interview would be helpful, she is requested to call the undersigned at (203) 575-2648 prior to the issuance of the next office action.

Respectfully submitted,



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